However, computer processing devices are not intended to be limited to these functional units. For example, in one or more example embodiments, the various operations and/or functions of the functional units may be performed by other ones of the functional units. Further, the computer processing devices may perform the operations and/or functions of the various functional units without sub-dividing the operations and/or functions of the computer processing units into these various functional units.

[0095] One or more portions of the image apparatus **1**, one or more image sensors included therein, some combination thereof, or the like according to one or more example embodiments may also include one or more storage devices. The one or more storage devices may be tangible or non-transitory computer-readable storage media, such as random access memory (RAM), read only memory (ROM), a permanent mass storage device (such as a disk drive), solid state (e.g., NAND flash) device, and/or any other like data storage mechanism capable of storing and recording data. The one or more storage devices may be configured to store computer programs, program code, instructions, or some combination thereof, for one or more operating systems and/or for implementing the example embodiments described herein. The computer programs, program code, instructions, or some combination thereof, may also be loaded from a separate computer readable storage medium into the one or more storage devices and/or one or more computer processing devices using a drive mechanism. Such separate computer readable storage medium may include a Universal Serial Bus (USB) flash drive, a memory stick, a Blu-ray/DVD/CD-ROM drive, a memory card, and/or other like computer readable storage media. The computer programs, program code, instructions, or some combination thereof, may be loaded into the one or more storage devices and/or the one or more computer processing devices from a remote data storage device via a network interface, rather than via a local computer readable storage medium. Additionally, the computer programs, program code, instructions, or some combination thereof, may be loaded into the one or more storage devices and/or the one or more processors from a remote computing system that is configured to transfer and/or distribute the computer programs, program code, instructions, or some combination thereof, over a network. The remote computing system may transfer and/or distribute the computer programs, program code, instructions, or some combination thereof, via a wired interface, an air interface, and/or any other like medium.

[0096] The one or more hardware devices, the one or more storage devices, and/or the computer programs, program code, instructions, or some combination thereof, may be specially designed and constructed for the purposes of the example embodiments, or they may be known devices that are altered and/or modified for the purposes of example embodiments.

[0097] A hardware device, such as a computer processing device, may run an operating system (OS) and one or more software applications that run on the OS. The computer processing device also may access, store, manipulate, process, and create data in response to execution of the software. For simplicity, one or more example embodiments may be exemplified as one computer processing device; however, one skilled in the art will appreciate that a hardware device may include multiple processing elements and multiple types of processing elements. For example, a hardware device may include multiple processors or a processor and a controller. In addition, other processing configurations are possible, such as parallel processors.

[0098] As described above, a corrected focal length is calculated based on a measured local temperature value, and a depth of an object relative to one or more portions of an image apparatus is calculated using the corrected focal length. Thus, the depth of an object relative to an image apparatus may be measured more accurately based on images of the object that are captured by the image apparatus. A depth of an object relative to an image apparatus may refer to a distance between the object and the image apparatus.

[0099] It should be understood that example embodiments described herein should be considered in a descriptive sense only and not for purposes of limitation. Descriptions of features or aspects within each device or method according to example embodiments should typically be considered as available for other similar features or aspects in other devices or methods according to example embodiments. While some example embodiments have been particularly shown and described, it will be understood by one of ordinary skill in the art that variations in form and detail may be made therein without departing from the spirit and scope of the claims.

What is claimed is:

1. A method for calculating a depth of an object relative to an image apparatus, the image apparatus including a depth pixel array, the depth pixel array including a an image pixel, the image pixel including a left pupil sensor and a right pupil sensor, the method comprising:

generating a left image of the object at the left pupil sensor;

generating a right image of the object at a right pupil sensor;

calculating a binocular disparity of the object based on the left image and the right image;

measuring a local temperature value associated with the image pixel;

calculating a corrected focal length associated with the image pixel based on the measured local temperature value; and

calculating the depth of the object relative to the image apparatus, based on both the binocular disparity and the corrected focal length.

2. The method of claim **1**, wherein,

the image apparatus includes a lens configured to direct incident light onto the image pixel, the lens including at least one temperature sensor; and

measuring a local temperature value associated with the image pixel includes processing sensor data generated by the at least one temperature sensor.

3. The method of claim **1**, wherein the image apparatus includes at least one temperature sensor in the depth pixel array.

4. The method of claim **1**, further comprising:

calculating the corrected focal length associated with the image pixel based on a temperature focal length variation table according to the measured local temperature, the temperature focal length variation table including an array of temperature values and corresponding focal length variation values.

5. The method of claim **4**, further comprising:

selecting at least two temperature values included in the temperature focal length variation table, such that at least two corresponding focal length variation values are selected, based on a determination that the measured local temperature value is absent from the temperature focal length variation table; and